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(54) BROMINE-BASED SOLVENT COMPOSITION FOR CLEANING

(57)Abstract:

PROBLEM TO BE SOLVED: To obtain the subject new composition, stable and excellent in cleaning function especially in vapor cleaning as an alternate solvent for CFC(R) and a hydrocarbon chloride by adding a specific two kinds of stabilizers to n-propyl bromide and/or iso-propyl bromide.

SOLUTION: This bromine-based solvent is composed of (A) n-propyl bromide and/or iso-propyl bromide, (B) a nitroalkane (preferably, one kind or a mixture of two or more kinds selected from nitromethane, nitroethane and nitropropane) and (C) butylene oxide. In the objective composition, the components B and C are compounded in an amount of 1-5wt.% and 0.5-3wt.%, respectively. Further, a weight ratio of the components B/C is preferably 0.5/3 to 5/0.5. Furthermore, the components B and C have boiling points and vapor pressures close to those of the component A, and accordingly a continuous work or a regenerating distillation can be performed without losing the balance in the liquid.

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CLAIMS

[Claim(s)]

[Claim 1] (a) n- bromination -- a propyl -- and/or -- iso -- bromination -- a propyl and (b) A nitroalkane and (c) Bromine system solvent constituent for washing characterized by containing butylene oxide.

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DETAILED DESCRIPTION

[Detailed Description of the Invention]

[0001]

[The technical field to which invention belongs] this invention relates to the bromine system solvent constituent for washing used as an alternative solvent of chlorofluorocarbon or a chlorine-based solvent.

[Description of the Prior Art] Chlorofluorocarbon and the chlorine-based solvent are used for the large area until now, and the stabilization technology and the used technology of chlorofluorocarbon or a chlorine-based solvent are developed variously. For example, the technology which adds the stabilizing agent chosen from the group which becomes the azeotropic mixture which contains TORIKUORO difluoroethane, a hydrocarbon, alcohol, a ketone, the ether, ester, etc. in JP.3-173835A, if it considers as stabilization technology from a nitro compound, FUYUNO-RU, amines, ether, amylene, ester, organic phosphate, epoxide, furans, alcohols, ketones, and triazoles is indicated. However, establishment of the outstanding solvent for washing which the use is restricted from the environmental problem in recent years, and replaces chlorofluorocarbon and a chlorine-based solvent with these, and its stabilization technology is desired.

[0002] Since the bromination hydrocarbon which is one of the alternative candidate of the inferior chemical stability and in respect of incombustibility compared with chlorofluorocarbon or a chlorinated hydrocarbon although not used as a solvent for degreasing washing of various metal parts and plastics -- JP.6-220494A -- n-bromination -- a propyl -- and -- iso -- bromination -- the technology which adds and uses the stabilizing agent chosen from the group which becomes a propyl from nitroalkanes, ether, epoxide, and amines is indicated. The content of an indication of this official report shall be included in the publication of this specification. However, if there are problems -- it is easy to produce discoloration -- especially amines are used as a neutralizer when liquid understands [the balance of liquid] an added water part by collapse, a cone, mixing of moisture, etc., and pH falls, when this technology also washes metal steamy washing continuously, or carrying out washing of copper, a copper alloy, and silver especially, it will be easy to produce a problem.

[0003]

[Problem(s) to be Solved by the Invention] In especially steamy washing, it is stable as chlorofluorocarbon or an alternative solvent of a chlorinated hydrocarbon, and this invention aims at offering the new solvent constituent for washing which has the outstanding cleaning effect. [Means for Solving the Problem] this invention was made based on knowledge that the above-mentioned technical problem is efficiently solvable, when a nitroalkane and butylene oxide were chosen from a number of stabilizers and these were used together, namely, this invention -- (a) n-bromination -- a propyl -- and/or -- iso -- bromination -- a propyl and (b) A nitroalkane and (c) The bromine system solvent constituent for washing characterized by containing butylene oxide is offered.

[0004]

[Embodiments of the Invention] accounting for the main rates of the solvent constituent of this invention -- n-bromination -- a propyl -- iso -- bromination -- they are propyls or such

mixture As a nitroalkane used by this invention, the nitroalkane of the carbon numbers 1-8, such as a nitromethane, is desirable, and a kind of a nitromethane, a nitroethane, and nitropropane or two sorts or more of mixture is especially desirable. These nitroalkanes are 1-5% preferably [using it in 0.5-15% of the weight (it being hereafter called % for short) of the range] among the solvent constituent of this invention, and more preferably, in this invention, it is characterized by using butylene oxide together to a nitroalkane. Butylene oxide is 0.5-3% preferably [using it in 0.05-3% of range] among the solvent constituent of this invention, and more preferably, although [this invention] it is arbitrary into the ratio of a nitroalkane and butylene oxide, it is desirable to set a nitroalkane/butylene oxide to 0.5/3-5/0.5 (weight ratio).

[0005] Unless it does not make use of the above-mentioned component indispensable and a performance is spoiled, other components can be made to contain in this invention, although it is not clear about the role of the nitroalkane in this invention, and butylene oxide -- a nitroalkane -- n-bromination -- a propyl -- iso -- bromination -- the operation which prevents that a propyl decomposes -- it is -- butylene oxide -- n-bromination -- a propyl -- iso -- bromination -- it is thought that it supplements with it when a propyl understands an added water part by mixing of water etc. and a hydrogen bromide arises, and there is an operation to neutralize. Therefore, by combining a nitroalkane and butylene oxide, such as a nitromethane, a nitroethane, and nitropropane, it is stabilized and continuous operation can be carried out in steamy washing satisfactory. Moreover, butylene oxide can be washed without having a bad influence also on metals, such as copper, a copper alloy, and silver, for a neutral acid neutralizer. Moreover, since the degree of acid acceptance is large, a bird clapper does not have a bath acid and all metals, such as iron and aluminum, do not corrode, the amines which carry out the same work -- passing -- the time -- n- of a principal component -- bromination -- a propyl and bromination -- since it reacts with a propyl and a crystal is produced, the crystal adheres to a washed object at the time of washing, it not only cannot add in a large quantity, but it has a bad influence or metals, such as copper, a copper alloy, and silver, discolor by amines [0006] furthermore, the combined use stabilizer used by this invention -- n-bromination -- a propyl -- iso -- bromination -- since a propyl, the boiling point, and vapor pressure are near values, there is also continuous operation or an advantage which can be stabilized and used, without the balance of liquid collapsing, even if it carries out reproduction distillation [Effect of the Invention] The solvent constituent for washing of this invention is excellent in degreasing washing nature, and can be used as an alternative solvent of chlorofluorocarbon and a chlorine-based solvent. Moreover, it not only can carry out degreasing washing good, but without discoloring or corroding the metal of a washed object by adding the specific stabilizer found out by this invention, it is stabilized for a long time and reproduction distillation becomes possible. Therefore, it can be used very suitable for washing, such as various metalworking articles and electronic parts. Next, an example explains this invention concretely.

[0007]

[Example]

In [examples] -- bromination -- to the propyl, nitroethane 2% and butylene oxide 1% were mixed, and the bromine system solvent constituent for washing was prepared to it
an example 2 -- iso -- bromination -- to the propyl, nitromethane 2% and butylene oxide 1% were mixed, and the bromine system solvent constituent for washing was prepared to it
3n [examples] -- bromination -- to the propyl, 2-nitropropane 2% and butylene oxide 1% were mixed, and the bromine system solvent constituent for washing was prepared to it
In [examples of comparison] -- bromination -- nitroethane 3% was mixed to the propyl and the bromine system solvent constituent for washing was prepared to it
the example 2 of comparison -- iso -- bromination -- butylene oxide 3% was mixed to the propyl, and the bromine system solvent constituent for washing was prepared to it
[0008] 3n [examples of comparison] -- bromination -- to the propyl, nitroethane 2%, methyl Cellosolve 1% was mixed, pH was adjusted to 6.5 by diisopropylamine, and the bromine system solvent constituent for washing was prepared
4n [examples of comparison] -- bromination -- to the propyl, nitroethane 2%, 1 and 4 dioxane

1% was mixed, pH was adjusted to 6.5 by diisopropylamine, and the bromine system solvent constituent for washing was prepared

The following method estimated the property of the obtained bromine system solvent constituent for washing. A result is collectively shown in Table -1.

[0009] The evaluation method (1)

According to the method given in JIS-K1600, the piece of aluminum (JIS-H -4000, A1100P) and the piece of copper have been arranged to each of the liquid phase section of the solvent constituent for washing, and the gaseous-phase section, change of discoloration and the corrosion situation of the piece of a metal of 48 hours after, and liquid was observed, and the following criteria estimated.

Corrosion situation error criterion Stability error criterion of a bath O With no change O With no change x Discoloration or those with corrosion x It is raw ** about coloring or precipitation to liquid.

[0010] The evaluation method (2)

The piece of aluminum and the solvent constituent for washing were put into the round bottom flask which attached the cooling pipe, the corrosion situation of the front face of the aluminum which damaged aluminum by sharp stainless steel and got damaged in liquid was observed after 2-hour reflux, and the following criteria estimated.

Corrosion situation error-criterion O Change-less x The evaluation method with corrosion (3)

The stability of the liquid of the solvent constituent for washing after working steamy washing continuously by using ***** as iron and copper for 100 hours, metale discoloration, and the corrosion situation were observed, and the following criteria estimated. In addition, since the steam prepared and collected cooling pipes in the upper part of a steamy layer, the moisture of 500 ppm or more mixed it.

Discoloration and corrosion situation error criterion Stability error criterion of a bath O With no change O With no change x Discoloration or those with corrosion x It is raw ** about coloring or precipitation to liquid.

[0011]

[Table 1] Table -1 The evaluation method The double ** method . *****Epsilon*****
 '*****]***** (1) - ***** ** ** ***** ** ** ***** ** ** ** *****
 **** ***** ** ** ***** ***** ***** [Table 2] Table -1 (continuation)

The evaluation method (2) . The evaluation method (3) The corrosion of aluminum Iron corrosion Copper corrosion Stability of a bath Example 1 O O O An example 2 O O O An example 3 O O O The example 1 of comparison x x
 x Example 2 of x comparison x x x Example 3 of x comparison O x x Example 4 of x comparison O x xx

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審査請求 未請求 請求項の数1 O L (全 4 頁)				(71)出願人 000109357 ディップアノール株式会社 東京都中央区京橋3丁目2番17号 (72)発明者 大島 聡英 東京都葛飾区西新小岩3-8-10 ディップ アノール株式会社テクニカルセンター内 (72)発明者 田中 茂英 東京都葛飾区西新小岩3-8-10 ディップ アノール株式会社テクニカルセンター内 (72)発明者 國廣 賢司 東京都葛飾区西新小岩3-8-10 ディップ アノール株式会社テクニカルセンター内 (74)代理人 井理士 中村 隆 (外7名) 最終頁に続く
(21)出願番号 特開平8-121634				
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(54)【発明の名称】 洗浄用臭素系溶剤組成物

(57)【要約】
【課題】 フロンや塩素化炭化水素の代替溶剤として、特に蒸気洗浄において安定で、優れた洗浄効果を有する新しい洗浄用溶剤組成物を提供すること。
【解決手段】 (a) n-臭化プロピル及び/又はイソ臭化プロピル、(b) ニトロアルカン及び/又はイソ臭化プロピル、(c) n-臭化プロピル及び/又はイソ臭化プロピルを含有する洗浄用臭素系溶剤組成物。

(2) 特開平9-302389

含有することを特徴とする洗浄用臭素系溶剤組成物を提供すること。

【0004】
【発明の実施の形態】 本発明の溶剤組成物の主な割合を占めるのは、n-臭化プロピル、イソ臭化プロピル又はこれらの混合物である。本発明で使用するニトロアルカンとしては、ニトロメタンなどの炭素数1〜8のニトロアルカンが好ましく、特にニトロメタン、ニトロエタン、ニトロプロパンの一種又は二種以上の混合物が好ましい。これらのニトロアルカンは、本発明の溶剤組成物中、0.5〜15重量% (以下、%と略称する) の範囲で使用するの好ましく、より好ましくは1〜5%である。本発明では、ニトロアルカンにブチレンオキシドを併用することを特徴とする。ブチレンオキシドは、本発明の溶剤組成物中、0.05〜3%の範囲で使用するの好ましく、より好ましくは0.5〜3%である。本発明では、ニトロアルカンとブチレンオキシドの比率に任意とすることができ、ニトロアルカン/ブチレンオキシドを0.5/3〜5/0.5 (重量比) とするのが好ましい。

【0005】 本発明では、上記成分の使用を必須とするものであり、性能を損ねない限り、他の成分も含有させることができる。本発明におけるニトロアルカンとブチレンオキシドの役割については明らかにされていないが、ニトロアルカンはn-臭化プロピルやイソ臭化プロピルが分解するのを防止する作用があり、ブチレンオキシドはn-臭化プロピルやイソ臭化プロピルが例えば水の混入などにより加水分解して臭化水素が生じた場合にそれを補足し、中和する作用があるものと思われる。よって、ニトロメタン、ニトロエタン、ニトロプロパンなどのニトロアルカンとブチレンオキシドを組み合わせたことにより、安定して問題なく、蒸気洗浄で連続作業できる。また、ブチレンオキシドは中性の酸中和剤のため、銅、銅合金、銀等の金属にも悪影響を与えないで洗浄することができる。また、酸変質が大きいため、浴が酸性になることがなく、鉄、アルミニウム等あらゆる金属が腐食することがない。同様な働きをするアミン類は洗時によって、主成分のn-臭化プロピルや臭化プロピルと反応して結晶を生じるため多量に添加することができないばかりでなく、その結晶が洗浄時に被洗浄物に付着して悪影響を与えたり、アミン類によって銅、銅合金、銀等の金属が変色したりする。

【0006】 さらに、本発明で用いる併用安定剤はn-臭化プロピルやイソ臭化プロピルと沸点及び蒸気圧が近い値のため、連続作業あるいは再生蒸留しても液のバランスが崩れることなく安定して使用できる利点もある。

【発明の効果】 本発明の洗浄用溶剤組成物は、脱脂洗浄性に優れ、フロン、塩素系溶剤の代替溶剤として使用することができる。又、本発明で用いた特定の安定剤を添加することにより、被洗浄物の金属を変色または腐

食することなく、長時間安定して良好に脱脂洗浄すること ができるとは限りなく卫生残留も可能となる。従つて好 適に使用できる。次に本発明を実施例により具体的に説 明する。	3	4	5
用鼻薬系溶剤組成物を調製した。		実施例2	○
比較例2		○	○
イン炭化プロピルに、ブチレンオキシド3%と混合し て洗浄用具薬系溶剤組成物を調製した。		比較例1	×
		比較例2	×
		比較例3	×
		比較例4	×
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